

KELLER & PARTNER

PATENTANWÄLTE AG

JC13 Rec'd PCT/PTO 01 APR 2005

14609-0036
10/529938

Werner A. Roshardt
Patentanwalt VSP
European Patent Attorney
Dipl.-Phys. ETH

Dr. Jürgen Junghans
Patentanwalt
Dipl.-Ing. Elektrotechnik
Physiker

Dr. Anton Steiner
Patentanwalt
Dipl.-Phys. ETH

Roman Stäbler
Patentanwalt
Dipl. El.-Ing. ETH

Dr. Philipp Rüfenacht
Patentanwalt
Dipl.-Phys. UniBE

Schmiedenplatz 5
Postfach
CH-3000 Bern 7
Switzerland
Telefon +41 (0) 31 310 80 80
Telefax +41 (0) 31 310 80 70/71
info@kellerpatent.ch
www.kellerpatent.ch

Bank CS Bern 398 655-81
(BLZ 4094)

Postkonto 30-22853-1

by fax und REGISTERED

European Patent Office
80298 Munich
DEUTSCHLAND

Bern, 13 January 2005/pb
our ref. RS/RS-15807
your ref.

Our File 15807

International Patent Application No. PCT/CH2002/000545;

Delta Energy Systems (Switzerland) AG

Response to telephone conversation of 10 January 2005

Dear Sirs,

1 New claim 1

In response to the telephone conversation of 10 January 2005 with the examiner regarding the above mentioned international patent application and in accordance with art. 34 PCT in connection with rule 66 PCT please find enclosed a new claim 1 (replacement sheet 13). The international preliminary examination report shall be established on the basis of this new claim 1 and the claims 2-15 as filed with our response of 10 December 2004.

In order to eliminate an unclarity as discussed with the examiner, the term "for holding the at least one coil (16)" in claim 1 has been deleted.

The remaining claims are not amended.

2 Patentability

Regarding the patentability of the claims I refer to our response of 10 December 2004 to the Written Opinion of 12 July 2004.

3 Rectification of obvious errors

As discussed with the examiner two obvious errors can be found in the description. While four separating plates (ref. number 3) are shown in the drawings 4 and 5 respectively, only three separating plates (3) are mentioned in the corresponding description on page 9, line 24 and on page 10 line 1. Since it is clear that it was obviously the intention to describe the drawings that show four separating plates, it is obvious that four separating plates should have been mentioned in the description instead of three. Accordingly, these are rectifiable obvious errors. On the enclosed replacement pages 9 and 10 the term "three" on page 9, line 24 and on page 10 line 1 has been replaced by the term "four".

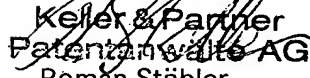
In accordance with rule 91 PCT the examiner is therefore kindly asked to replace the originally filed pages 9 and 10 by the enclosed replacement pages 9 and 10.

4 Examination report

As the new set of claims overcomes all objections, a positive international preliminary examination report can be expected.

In the case the examiner requires further clarifications or does not agree with the above comments he is kindly requested to call back.

Yours faithfully,


Keller & Partner
Patentanwälte AG
Roman Stäbler

- replacement sheets 9, 10 and 13
- form of acknowledgement of receipt

connected to one of the side walls 6.3, 6.4. On the outer surface of the side walls 6.3, 6.4 recesses 8 are provided for positioning separating plates 3 after fitting them over the coil portion 6.

On the lower side of the flange portion 7, terminals 9 are located. Due to the perspective
5 view of fig. 1, some of the terminals 9 are not visible.

In fig. 2, an exploded perspective view of a transformer body 10 with the coil form 1 is shown. Fig. 3 shows the same transformer body 10 assembled. Unlike in fig. 1, three separating plates 3 are provided. The transformer body 10 includes a magnetic core 11 which consists of two E-shaped core parts 11.1, 11.2 which include two outer legs 12 and a middle leg 13 respectively. The recesses 14 on the outer legs 12 are provided for mounting
10 clamps (not shown) to hold and press the E-shaped parts 11.1, 11.2 of the core 11 together. It is to mention that the needed wire windings have to be wound around the coil body 2 before the clamps are mounted around the transformer body 10.

To assemble the transformer body 10, the separating plates 3 are pressed over the coil
15 body 2 and then the E-shaped parts 11.1, 11.2 of the core 11 are fitted together by inserting the middle legs 13 into the opening 4.1. E-shaped part 11.1 is inserted from the front (as shown in fig. 2) and E-shaped part 11.2 is inserted into the opening 4.1 from behind. Then the transformer body is clamped together for example by mounting clamps in the recesses 14.

20 In the assembled transformer body 10, both outer separating plates 3 are directly in touch with the E-shaped parts 11.1, 11.2 of the core 11. Hence, the heat generated within the windings of the transformer can be efficiently dissipated via the separating plates 3 to the core 11, which functions as a heat sink.

Fig. 4 shows the coil body 2 with four separating plates 3 in a side view. The separating
25 plates 3 are not yet fitted over the coil portion 6 and no wire windings are provided on the surface of the coil portion 6. In this view, the recesses 8 for holding the separating plates 3 and the terminals 9 on the flange parts 7.1, 7.2 can be seen clearly.

Fig. 5 shows the same coil body 2 as fig. 4 but here, the four separating plates 3 are fitted over the coil portion 6 thereby dividing the surface of the coil portion 6 into three coil areas 15. In each of these coil areas 15, a wire winding 16 is provided on the surface of the coil portion 6.

- 5 When a transformer with a coil body 2 as shown in fig. 5 is in operation, the wire windings 15 generate a lot of heat. This heat is generated just near the separating plates 3 which are made of a metal such as for example copper or aluminium or any other metal with high heat conducting capabilities. This means that the separating plates not only serve as a side support for the wire windings 15 but also dissipate the heat generated within the wire
- 10 windings 15 efficiently. As mentioned above, the separating plates 3, or at least some of them, are in direct contact with the core 11 which helps to dissipate even more heat.

At this point, it is to mention, that fig. 5 shows a small space between the outermost separating plates 3 and the flange portion 7 and the other side of the coil body 2. However, as the separating plates 3 are in direct contact with the flange portion 7 (and with the smaller

15 flange portion on the other side), there are no such spaces. This is also true for other figures, such as for example fig. 8, where there seems to be a small space between the separating plates 3.1 and the insulation plates 19.

Fig. 6 shows an exploded perspective view of another transformer body 10.1 with a further embodiment of a coil form 1.1 according to the invention. The coil body 2.1 is almost the

20 same as the coil body 2 in the transformer body 10 of fig. 2. The only difference is, that it comprises just two recesses 8 on the surface of the coil portion 6.1.

There are four separating plates 3.1 which are arranged in two groups and which have slightly a different shape than the separating plates 3 of fig. 1 and 2. The shape of the separating plates 3.1 is shown in more detail in fig. 7. The separating plates 3.1 have a

25 recess 17 on the lower edge of the opening 4 and on both sides of the slit 5.1 they have a terminal projection 18. At this point it is to say that, although all of the four separating plates 3.1 have the same shape, two of them (that is one in each group as shown in fig. 6) are laterally reversed.

Ansprüche 1 - 15

1. A coil form (1, 1.1) for forming an inductive element with a core (11.1, 11.2) and at least two coils, including
 - a) a hollow coil body (2) for insertion of the core, the coil body having an outer surface
 - 5 b) and at least one separating plate (3, 3.1) which surrounds the outer surface of the coil body thereby providing at least one coil area (15, 15.1) on the surface of the coil body,
characterised in that
 - c) the coil body is made of plastic and includes at least one recess on its outer surface
 - 10 d) the separating plate is made of metal, having an opening (4) for pushing the separating plate over the coil body and having a slit (5) for prohibiting leakage currents within the separating plate,
 - e) the separating plate forms a winding of one of the at least two coils
 - 15 f) and in that another coil of said at least two coils includes an insulated wire wound around the coil body in said at least one coil area, the separating plate being a side support for said wire and dissipating heat generated within the wire.
2. A coil form according to claim 1, characterised in that the coil body includes a coil portion (6) of a kind of a hollow cylinder for slipping over the separating plate and a flange portion (7) on an end region of the coil portion.
- 20 3. A coil form according to claim 2, characterised in that the flange portion includes a plurality of terminals (9) where at least one terminal is electrically conductively connectable to an end of one of the at least two coils.
4. A coil form according to any of claims 1 to 3, characterised in that a shape of the opening (4) of the separating plate substantially corresponds to a shape of the outer surface of the coil body and in that an internal diameter of the separating plate is smaller than an outer diameter of the coil body.
- 25